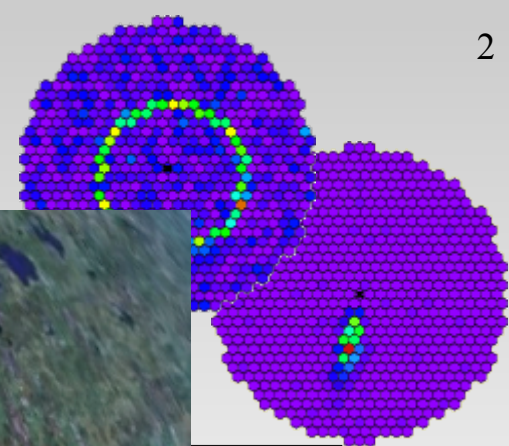
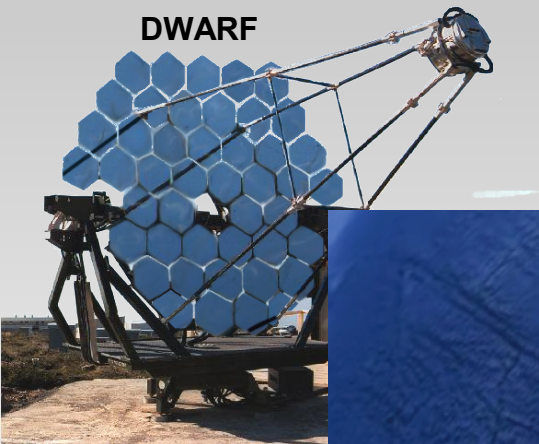
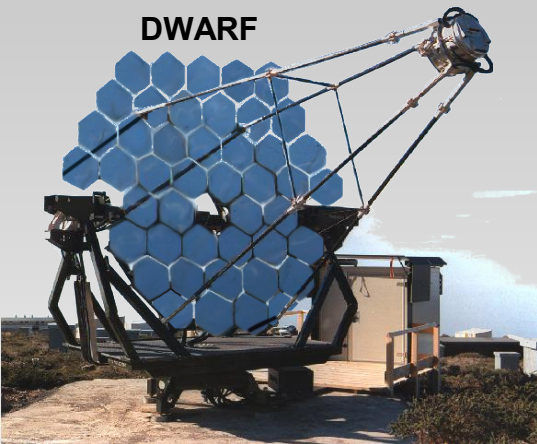


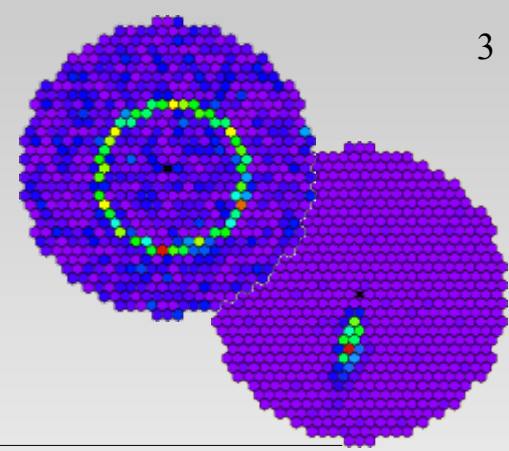
Status of the DWARF project for long-term monitoring of bright blazars

Thomas Bretz
for the DWARF Collaboration





The DWARF Telescope



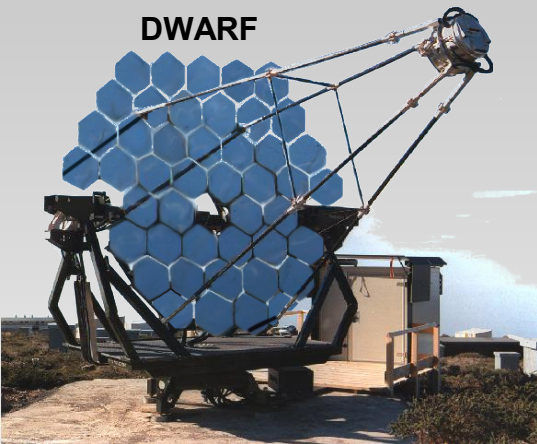
HEGRA CT3 at La Palma



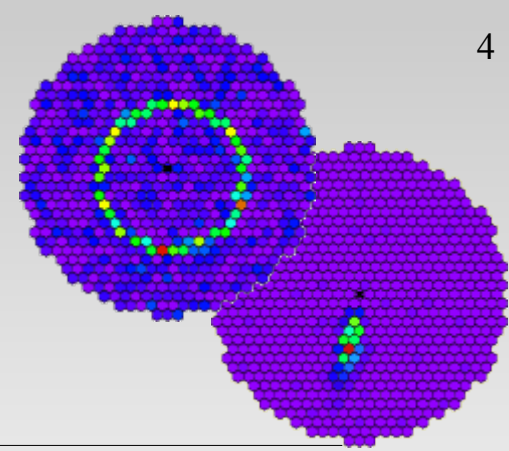
The idea

- Affordable monitoring telescope
 - observing only a few target objects (Mkn421, Mkn501, ...)
 - with large duty cycles

- Refurbish one of the former HEGRA telescopes
- switched off since ~2002
- CT3 still at La Palma



The DWARF Telescope

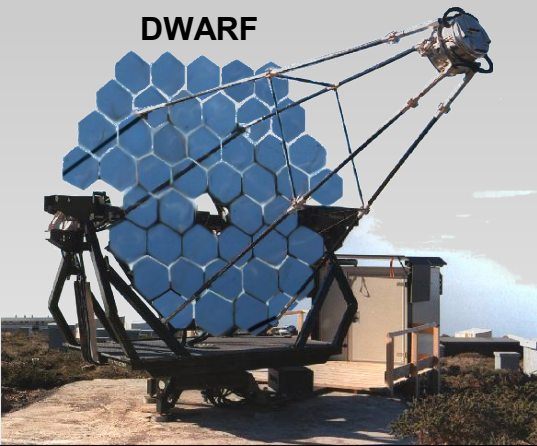


HEGRA CT3 at La Palma

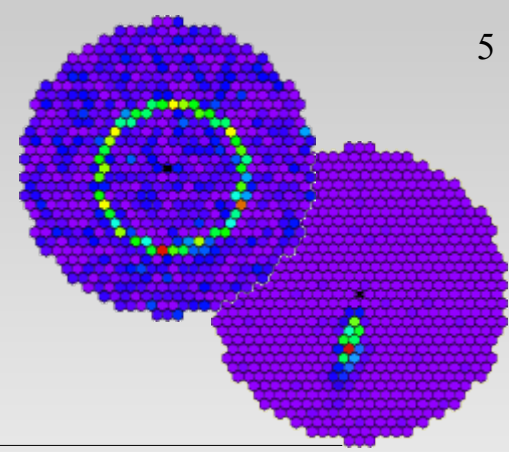


DWARF





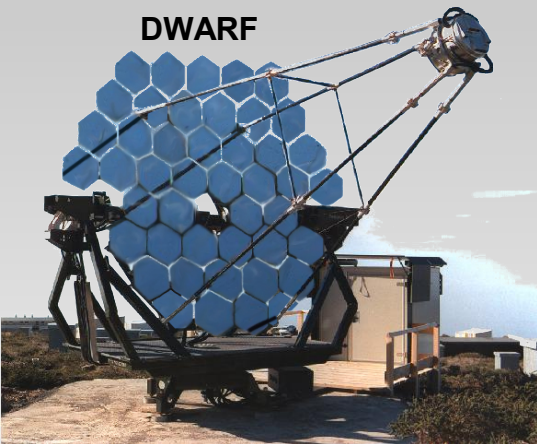
The DWARF Telescope



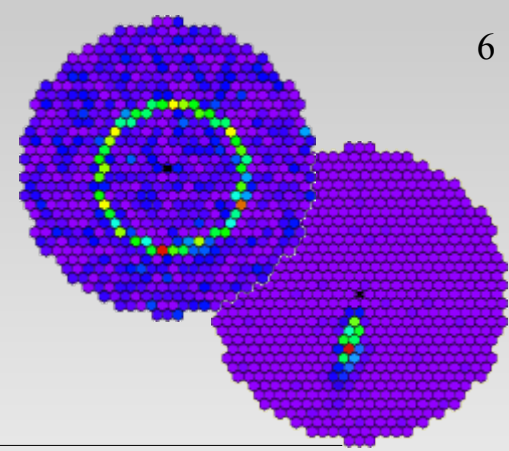
Upgrade telescope:

- Will be operated remotely
- New drive system
 - *downscaled* version of the MAGIC I and II drive system
 - system bought and assembled
 - waiting for shipment





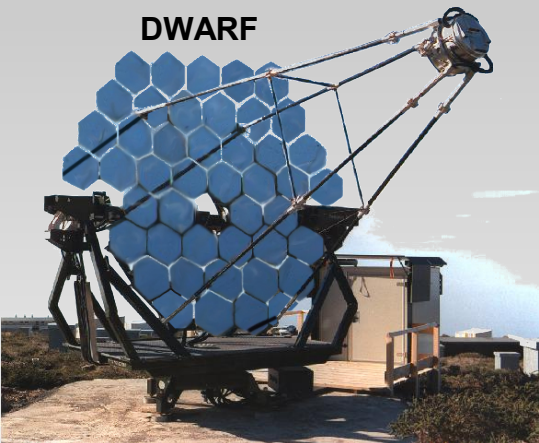
The DWARF Telescope



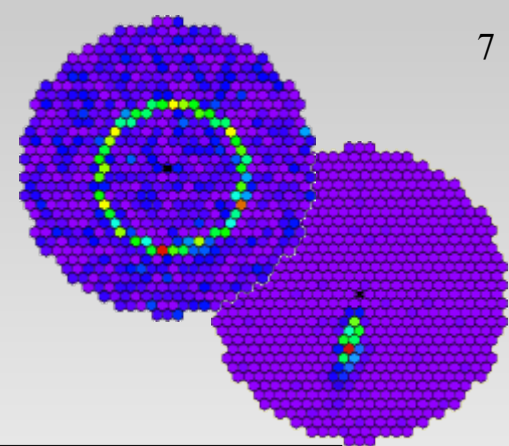
Upgrade mirrors:

- 40 mirrors from HEGRA CT1
 - hexagonal
 - slightly larger mirror area
 - after refurbishment
 - improved reflectivity
- waiting for shipment
- Mirrors have been measured
 - ... focal length measurement.
 - ... reflectivity measurement.
 - ... PSF $\sim 0.5\text{mrad}$





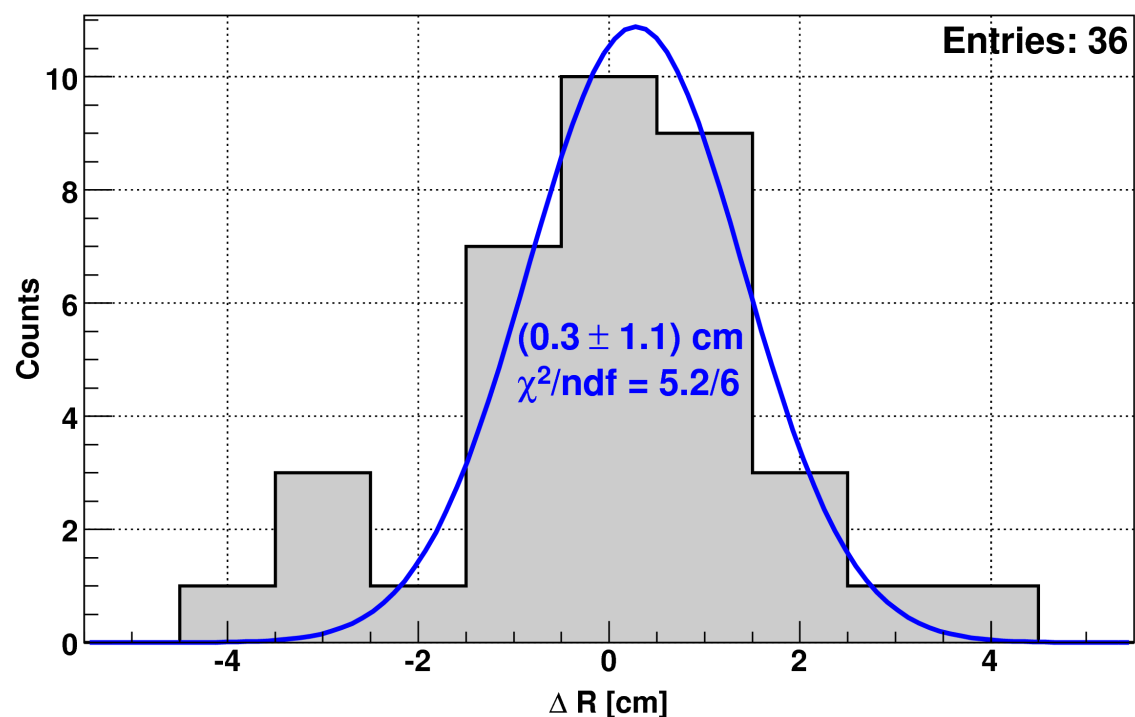
The DWARF Telescope

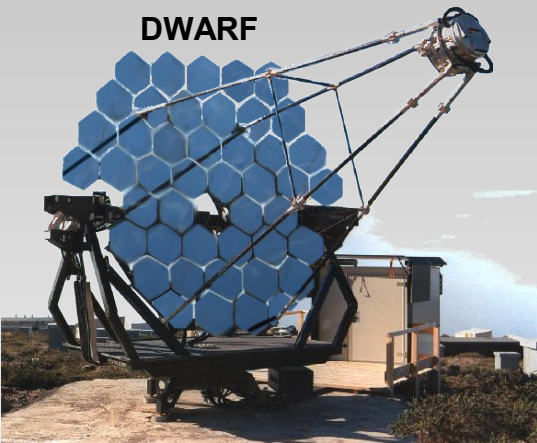


Upgrade mirrors:

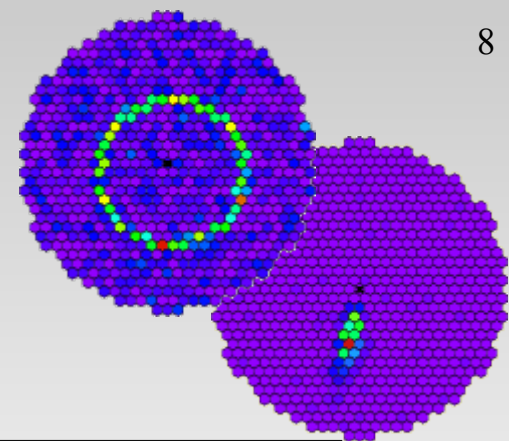
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 - ... reflectivity measurement.
 - ... PSF $\sim 0.5\text{mrad}$

Deviation from nominal focal length (490cm)



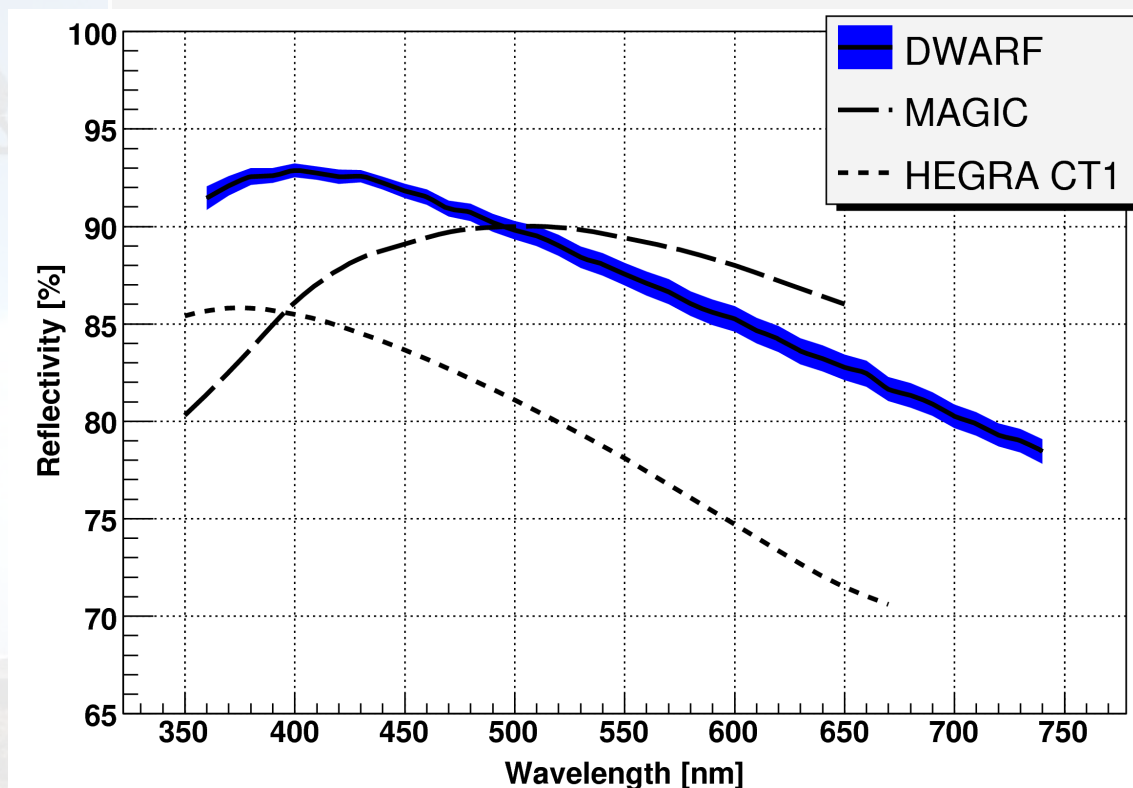


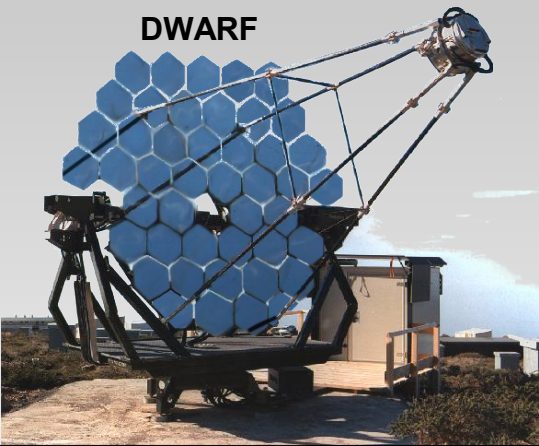
The DWARF Telescope



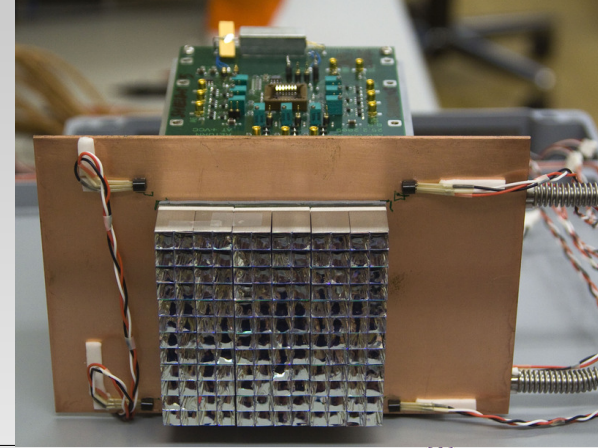
Upgrade mirrors:

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The Camera



Upgrade camera:

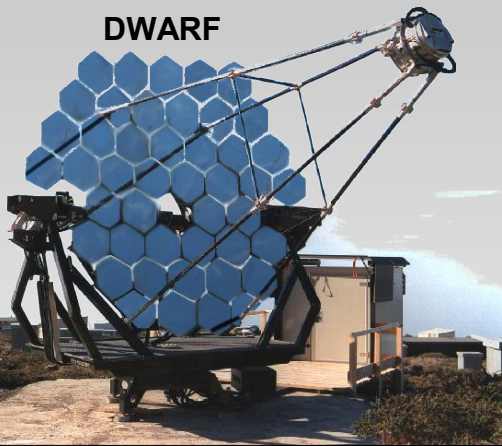
- New type camera
 - Semi-conducting photo-sensors (G-APDs)

→ Talk: T. Krähenbühl

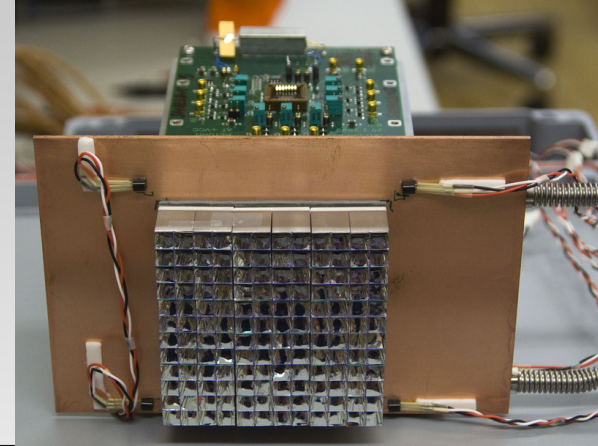
- Compared to PMTs
 - better photon detection efficiency
 - robustness



DWARF



The Camera



Upgrade camera:

- New type camera
- Semi-conducting photo-sensors (G-APDs)

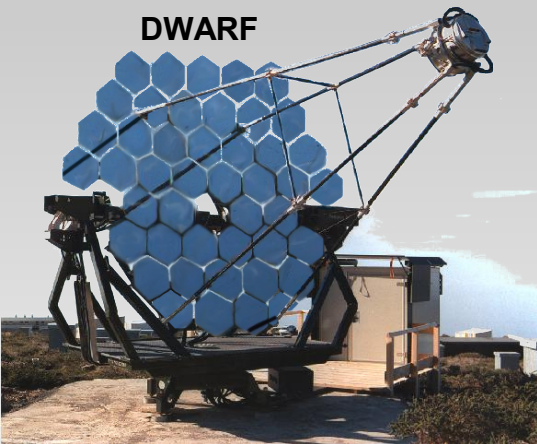
→ Talk: T. Krähenbühl

- Compared to PMTs
 - better photon detection efficiency
 - robustness

Prototype (FACT-project)

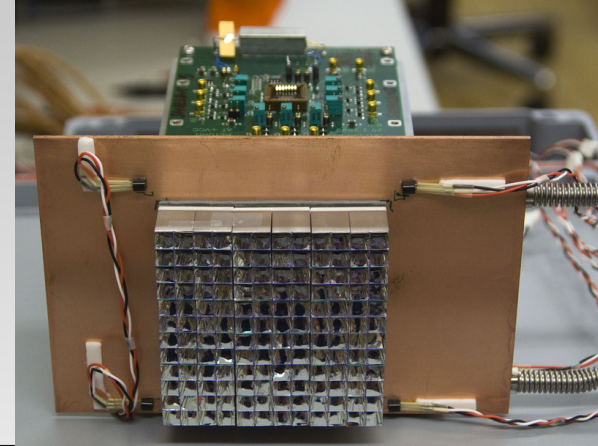
→ Talk: Q. Weitzel





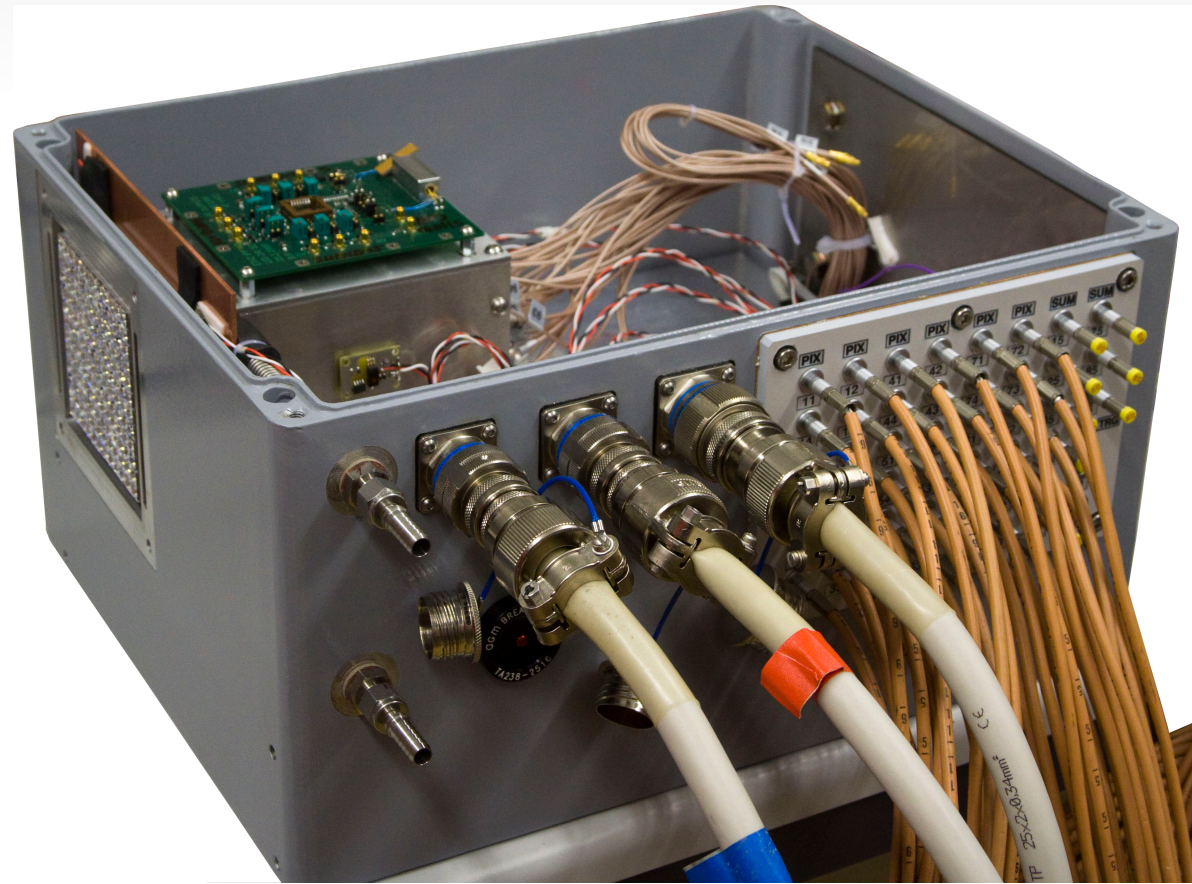
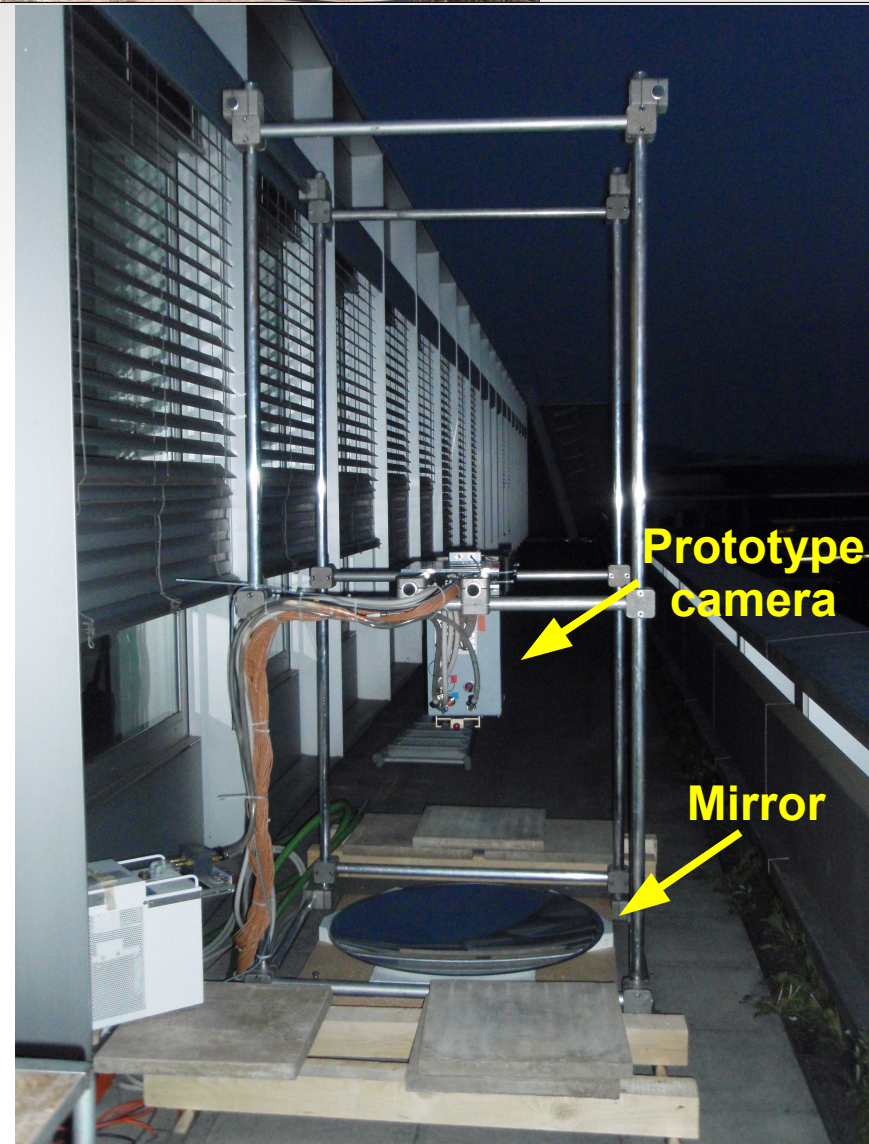
DWARF

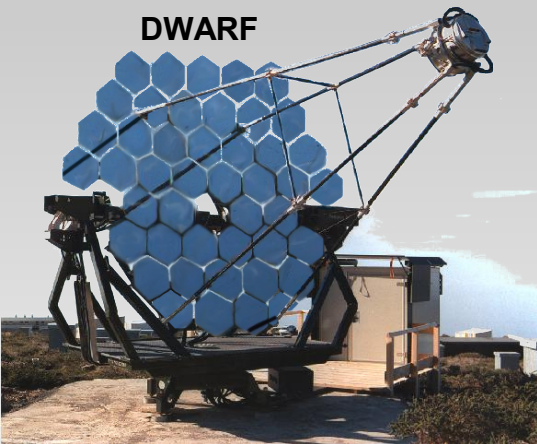
The Camera



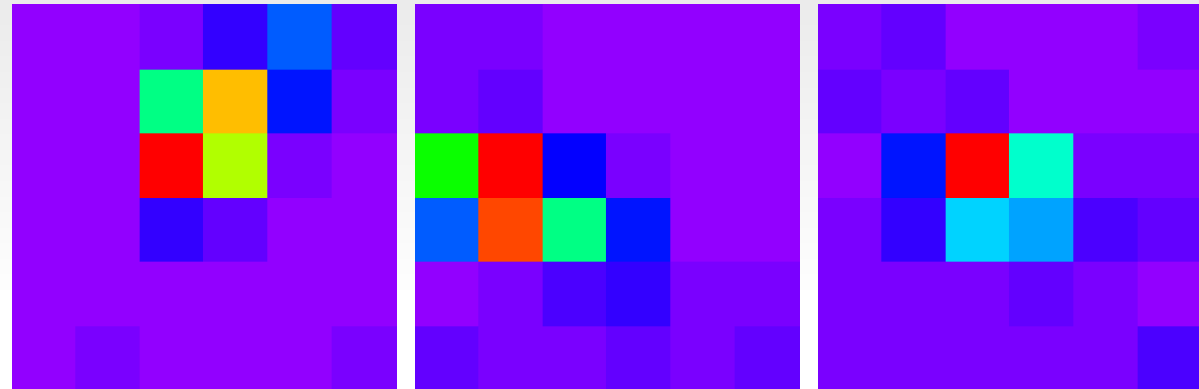
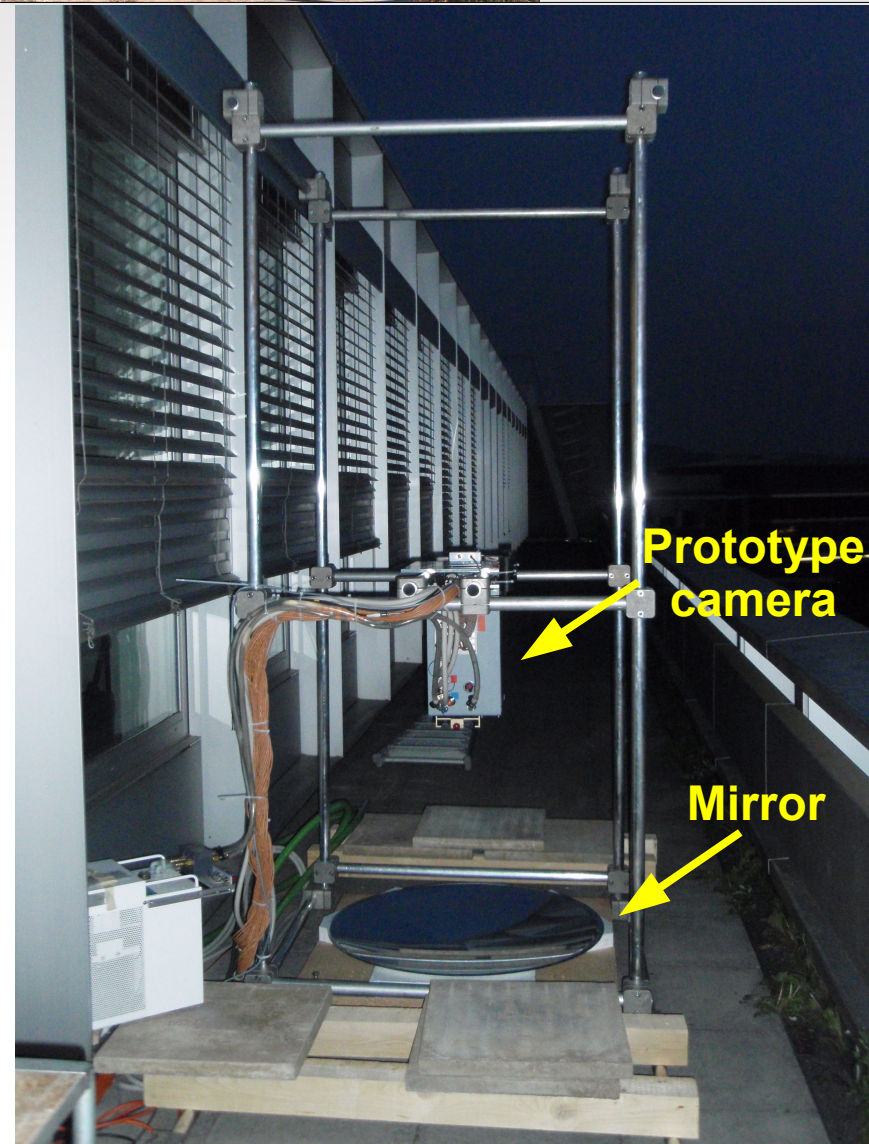
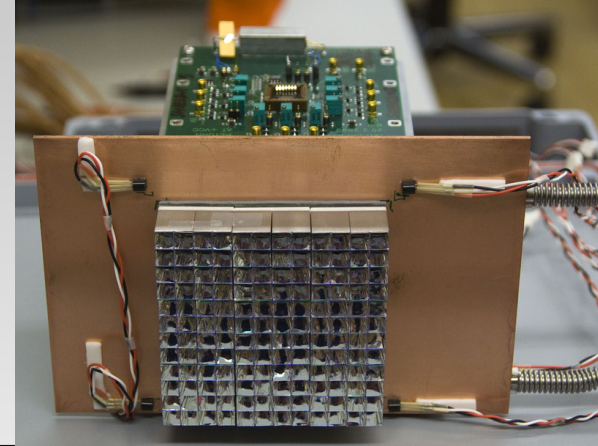
Prototype (FACT-project)

→ Talk: Q. Weitzel



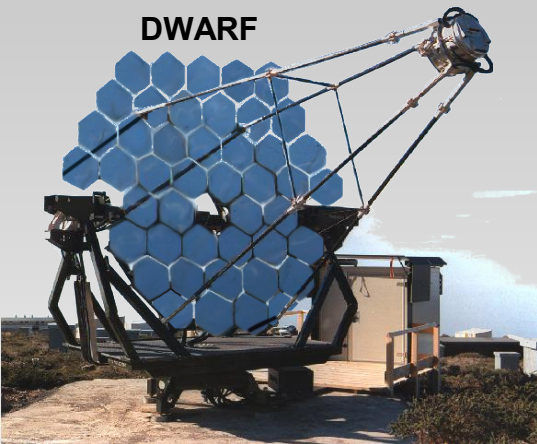


The Camera

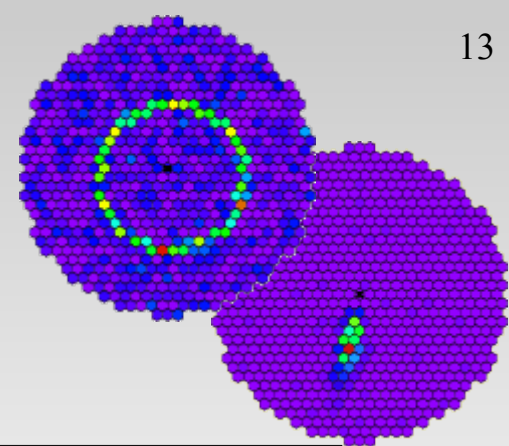


Prototype:

- First shower images successfully recorded
- Extensive lab-investigations ongoing



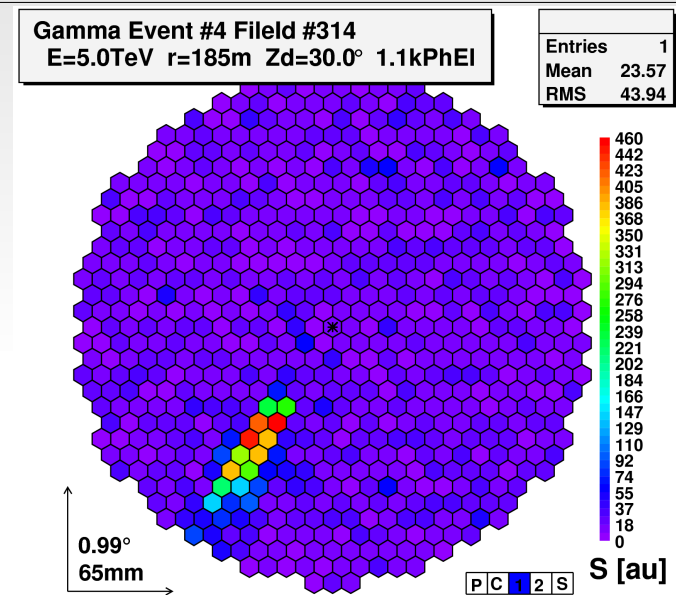
The Camera

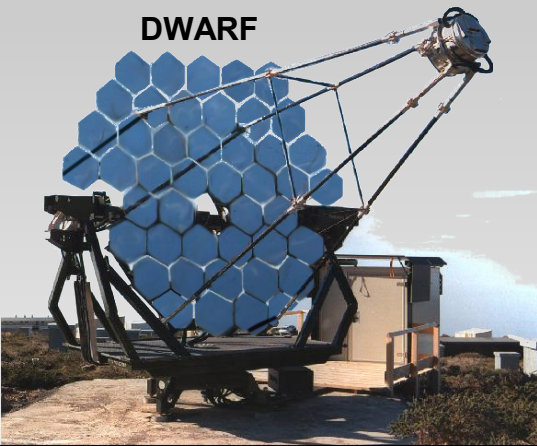


Final Camera:

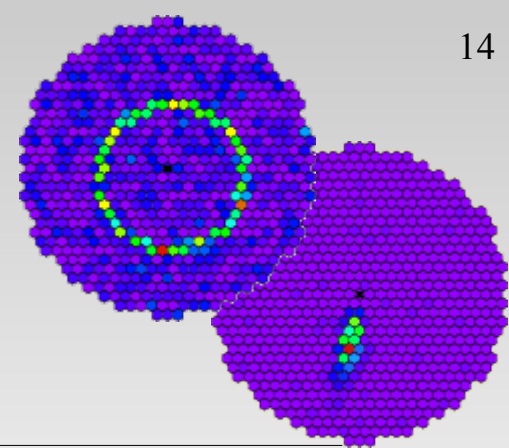
- Specifications almost finished
 - 5° field-of-view
 - readout build into the camera (using DRS4)
 - sampling of the time information
 - ➔ Improves sensitivity compared to the HEGRA telescopes
- Use of solid cones still under investigation

➔ Poster (OG2.7: 1248)
- Design ready end of the year
- Camera finished in 2010





Simulations



- Simulations are ongoing with **ceres**

→ Poster (OG2.7: 1259, 985)

- Currently, the main focus is the optimization of the camera properties

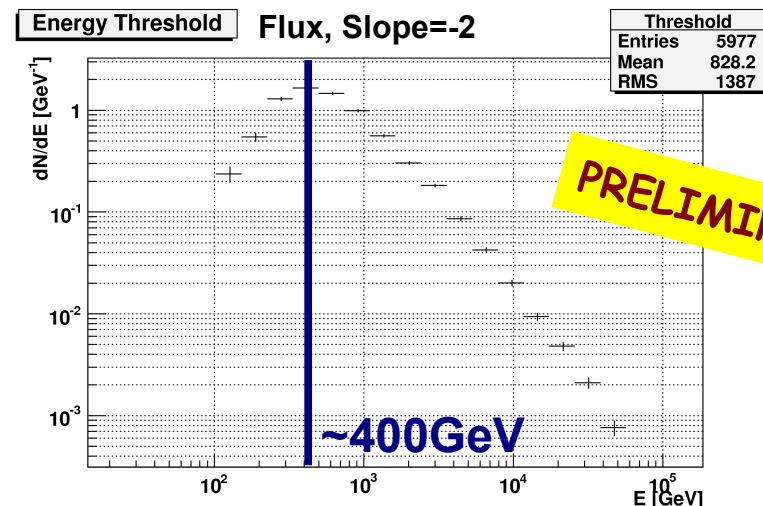
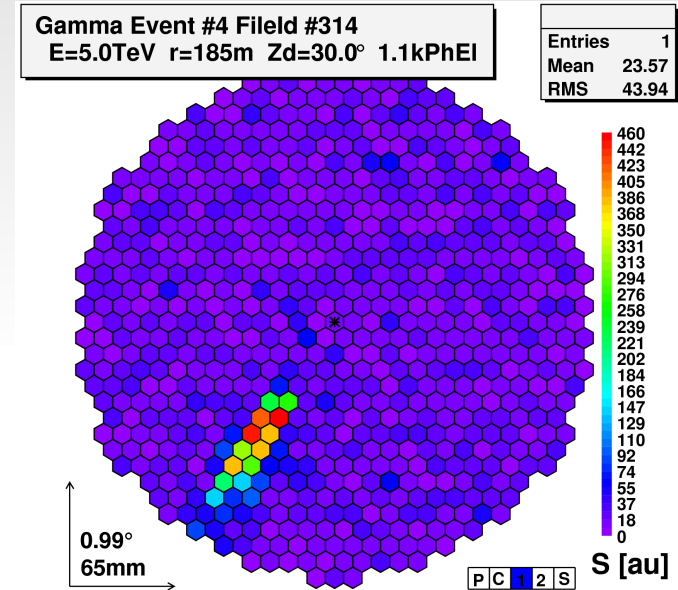
Several trigger types are compared:

- Next neighbor triggers
- Multiplicity trigger
- Sum triggers
- Different layout for all types

→ More than 50 triggers simulated

→ The sum trigger performs clearly best

- All simulations show promising results with an energy threshold (flux peak energy) around 400GeV for reconstructed images



Thank you!

First results expected before ICRC 2011!

Monitoring: Important

Performance: Very good for (a) DWARF

Camera: Prototype successfully tested

Mirrors: Ready and measured

Mount: Almost finished

Dwarf